UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,948	02/10/2004	Anders Astrom	35947-201058	8639

26694 7590 10/27/2009

VENABLE LLP
P.O. BOX 34385
WASHINGTON, DC 20043-9998

EXAMINER	
TSAI, TSUNG YIN	
ART UNIT	**PAPER NUMBER**
2624	
MAIL DATE	**DELIVERY MODE**
10/27/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/774,948	ASTROM ET AL.	
	Examiner	Art Unit	
	TSUNG-YIN TSAI	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Acknowledge of amendment to claims 1-2 and 9-10.

No new IDS has been submitted.

Response to Arguments

1. Applicant's arguments filed 8/20/2009 have been fully considered but they are not persuasive.

Applicant argues on page 10, first paragraph, that prior art does not teach detecting any light scattering by the object below the surface of the object, only on the surface.

Examiner is unable to find support in the original specification where the light detection by the invention is **below** the object of interest. Thus, the applicant's argument is moot and not persuasive. Furthermore, Luminari discloses in the abstract where detecting and correcting defects **in** plywood panels, where in can be seen as below or into the surface.

2. Applicant's arguments filed 8/20/2009 have been fully considered but they are not persuasive.

Applicant argues on page 10, second paragraph, that the prior art does not teach plurality of light sources as taught in claim 14.

Examiner disagrees. Claim 14 does not recited using plurality of light sources, but rather plurality of points. Luminari discloses in figure 6, where a line of light is use on the scan object, where a line is seen as plurality of points as taught by the claim language of claim 14.

3. Applicant's arguments filed 8/20/2009 have been fully considered but they are not persuasive.

Applicant argues on page 11-13 regarding where classic image compression is not taught by the prior art.

Examiner is unclear on what is considered class compression by the applicant. Applicant mention classic compression such as JPEG, but compression were not claim in the invention so it is claim language is not consider. Applicant will have to amend such claims language to put this into consideration and examination.

35 USC 103 – Claim Rejection

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 8-9, 13-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luminari (US Patent Number 4.984,172 IDS) in view of Varghese et al (CA 2 335 784, IDS) and Ervin (US Patent Number 4,168,489).

Luminari disclose the method and system that carries the function of imaging characteristics, comprising:

(1) Regarding claim 1, similarly claim 9:

an object (title disclose object as wood panels, abstract disclose object as plywood panels, figure 1, figure 3, figure 5 disclose what samples of interest are detected in the object, column 1 lines 60-67) with of a measuring system (abstract disclose a measuring device for scanning with respect of the x, y and z axes, figure 2 parts 15-18 are the detection devices, column 4 lines 30-35 disclose system that can determine the length, width and depth of the object of interest) the method comprising:

moving at least one of the measuring system and/or the object in relation another of the measuring system and the object in a predefined direction (figure 3 disclose that the object of interest is move in a predetermine direction by the belts, column 2 lines 5-18 disclose the a predefined direction such as longitudinally, transversally and vertically with respect to the object of measurement) of movement,

moving the object in relation (figure 3 disclose that the object of interest is move in a predetermine direction by the belts, column 2 lines 5-18 disclose the a predefined direction such as longitudinally, transversally and vertically with

respect to the object of measurement) to the measuring system (abstract disclose a measuring device for scanning with respect of the x, y and z axes, figure 2 parts 15-18 are the detection devices, column 4 lines 30-35 disclose system that can determine the length, width and depth of the object of interest),

illuminating the object with incident light (abstract disclose light bean that transversely onto the surface of the object of interest, figure 6 disclose a light beam and pat 19 that show the light source, column 3 lines 28-40 disclose a LASER projector or a light beam), which has limited extension in the direction of movement (abstract disclose the light been has a limited extension; only in the transverse position of the panel, figure 6 disclose a the light source 19 having a limited extension in terms of 42 as the object of interest move in predefine direction, column 3 lines 28-40, column 4 lines 30-36),

detecting light reflected from the object (abstract disclose reflected beam use to measure the object of interest, column 4 lines 25-40 disclose reflected beam to determine length, width and depth of the object of interest) with an imaging sensor (abstract disclose a detecting and measuring system where the detecting system measure the x, y and z axes of the from the reflected light, figure 6 part 40 is a image sensor, column 3 lines 28-40 disclose a CCD is resolve the reflects into a series of points) arranged on the same side of the object as the incident light (figure 1-6 disclose the placement is on the same plane or same side of the object of light),

converting the detected light into electrical charges with the image-processing sensor (figure 6, column 3 lines 28-40 disclose a detection system that can be a CCD that is able to convert the reflected light into electrical charges that will the properties of object of interest),

creating a digital representation of the object (3 lines 28-40 disclose a detection system that can be a CCD where CCD output digital outputs in respect to the x, y, and z Cartesian coordinates for the profile) from the electrical charge, marking the light to strike the object at a predetermined distance (figure 1-6 disclose the light source is set in predetermine distance as the object of interest, figure 4 disclose where the light strike the object from a predetermined distance, figure 6 disclose the predetermine distance between the light source and the object of interest, column 1 lines 63-67 disclose the pre-established distance) from the imaging sensor viewed in the direction of movement of the object (figure 1-6 disclose the sensors view in the direction of the movement of the object, column 2 lines 7-17 disclose the sensors are adjustable in order to detect the light reflection with different sort of object of interest, column 4 lines 10-15 disclose detecting system translate along path of the movement of object of interest), and

simultaneously reading out from the digital representation information on a geometric profile of the object (abstract disclose the x, y and z showing the geometric profile of the object of interest, column 3 lines 10-15 disclose that sensor can detect the defects of the object of interest in geometrical terms,

column 3 lines 28-38 disclose the CCD able to form the geometrical profile of the object of interest from the reflect light into x, y and z coordinates, column 4 lines 20-25 disclose measuring system that is able to determine the length, width and depth which are geometrical profiles, column 4 lines 30-35) by detecting a position of the reflection of the incident light in a given column on the imaging sensor (**figure 5 (reflection of position of defects) and column 3 lines 1-15 and figure 6, especially part 42, the incident light can be seen as column light and part 40 seen as imaging sensor**)

and information on a light scatter (figure 5 disclose the imperfection on the object of interest that can be determine from the light reflection/light scatter, figure 6 disclose detector 40 that collects the scatter lights, column 3 lines 28-38 disclose the CCD that detect the reflected beams for x, y and z coordinates, column 4 lines 3-10 disclose that the light intensity collected can determine further profile of the object of interest) in a predetermined area (figure 6 disclose the beam to be only in a predetermine area by the line 42 and angle of 41, column 3 lines 28-54) around the said profile (3 lines 28-40 disclose a detection system that can be a CCD where CCD output digital outputs in respect to the x, y, and z Cartesian coordinates for the profile)

based upon a shape of the digital representation of the incident light over a number of sensor rows (**figure 5 and column 4 lines 1-20 (shape of knots, glue, paint stains, spot) and figure 6. especially part 40**).

Luminari does not teach:

- detecting with the imaging sensor light scattered in the object simultaneously with detecting the reflected light
- wherein the digital representation is divided into rows and columns, and

However, Varghese et al teaches a wood differentiating system detecting with the imaging sensor light scattered in the object simultaneously with detecting the reflected light

[page 3, especially lines 10-20 (light scattering in the wood with line-forming laser and camera for detection)].

It would have been obvious to one skill in the art at the time of the invention to employ Varghese et al teachings to modify Luminari by detecting light scattered in the object , such as wood, in order to achieve a differentiating system designed to efficiently and cost effectively differentiate between different types of wood as discloses by Varghese et al as discloses in page 1 lines 23-24.

However, Ervin teaches regarding dividing up into rows and columns (figure 1-2, figure 6).

It would have been obvious to one skill in the art at the time of the invention to employ Ervin teaching to Luminari regarding divided up into rows and columns such that it easier to locations of the detected defects of the location of rows and columns.

(2) Regarding claim 2, similarly claim 10:

Ervin further teaches:

- a compressed image (figure 6) is created from the digital representation by reducing the number of rows (figure 2 and figure 6 disclose where the compress image has reduced rows, column 2 lines 50-65 show the compressing for reducing “height” which is seen as rows).

(3) Regarding claim 8:

Luminari further teaches:

reading out from the digital representation information on an intensity distribution addition to information (column 3 lines 1-20 disclose additional information such as chromatic discontinuities of the surface, knots, glue or paint stain or spots) on the geometric profile (abstract disclose the x, y and z showing the geometric profile of the object of interest, column 3 lines 10-15 disclose that sensor can detect the defects of the object of interest in geometrical terms, column 3 lines 28-38 disclose the CCD able to form the geometrical profile of the object of interest from the reflect light into x, y and z coordinates, column 4 lines 20-25 disclose measuring system that is able to determine the length, width and depth which are geometrical profiles, column 4 lines 30-35) of the object and the light scatter (abstract disclose reflected beam use to measure the object of interest, column 4 lines 25-40 disclose reflected beam to determine length, width and depth of the object of interest), (abstract disclose the measure of light

intensity, column 3 lines 1-5 disclose chromatic discontinuities which is due to light intensity reflection, column 3 lines 28-55 to column 4 lines 1-10 disclose the information that are gather due to light intensity) (3 lines 28-40 disclose a detection system that can be a CCD where CCD output digital outputs in respect to the x, y, and z Cartesian coordinates for the profile).

(3) Regarding claim 13:

Luminari further teaches:

wherein the incident light comprise linear light (figure 6, column 3 lines 25-35 disclose a the light source to be LASER, which is seen as a linear light source).

(4) Regarding claim 14:

Luminari further teaches:

wherein the incident light comprises of a plurality of points or linear segments (column 3 lines 25-55 disclose the linear light source which detect position of points that are aligned along a straight line).

(5) Regarding claim 16:

Luminari further teaches:

wherein in addition to information (column 3 lines 1-20 disclose additional information such as chromatic discontinuities of the surface, knots, glue or paint

stain or spots) on the geometric profile (abstract disclose the x, y and z showing the geometric profile of the object of interest, column 3 lines 10-15 disclose that sensor can detect the defects of the object of interest in geometrical terms, column 3 lines 28-38 disclose the CCD able to form the geometrical profile of the object of interest from the reflect light into x, y and z coordinates, column 4 lines 20-25 disclose measuring system that is able to determine the length, width and depth which are geometrical profiles, column 4 lines 30-35) of the object and the light scatter (figure 5 disclose the imperfection on the object of interest hat can be determine from the light reflection/light scatter, figure 6 disclose detector 40 that collects the scatter lights, column 3 lines 28-38 disclose the CCD that detect the reflected beams for x, y and z coordinates, column 4 lines 3-10 disclose that the light intensity collected can determine further profile of the object of interest), the image-processing unit (column 2 lines 5-65 disclose the processing unit) is also configured to read out information on an intensity distribution (abstract disclose the measure of light intensity, column 3 lines 1-5 disclose chromatic discontinuities which is due to light intensity reflection, column 3 lines 28-55 to column 4 lines 1-10 disclose the information that are gather due to light intensity) from the digital representation (3 lines 28-40 disclose a detection system that can be a CCD where CCD output digital outputs in respect to the x, y, and z Cartesian coordinates for the profile).

(2) Regarding claims 7 and 15:

Ervin further teaches:

- wherein the compressed image (figure 6) is created by saving for each column the maximum value for the pre-selected rows (column 2 lines 52-63 disclose pre-selected rows, figure 2 and figure 6 disclose where the compress image has reduced rows, column 2 lines 50-65 show the compressing for reducing "height" which is seen as rows, column 4 lines 1-67 to column 5 lines 1-30 disclose that rows that has detection is label as "1" and that values is save by that row and column).

It would have been obvious to one skill in the art at the time of the invention to employ Ervin teaching to Luminari regarding wherein the compressed image is created by saving for each column the maximum value for the pre-selected rows, such that this form of compression is a way to reduced redundant or repeating data so less memory will be taken for the storage of the image data for those of limited storage space or limited bandwidth for the image data transfer.

1. Claims 3-6 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luminari (US Patent Number 4.984,172 IDS) in view of Ervin (US Patent Number 4,168,489) as applied in claims 2 and 10 respectively above, and further in view of Kableshkov (US Patent Number 5,490,100).

(1) Regarding claim 3 and 11:

Luminari and Erivin teach regarding digital representation by reduction of rows.

Luminari and Erivin does not teach regarding the reduction of row by summation of rows in a predetermine order.

However, Kableshkov teaches regarding the reduction of row summation of rows (column 1 lines 15-20 disclose the cumulative summation on a row-by-row basis, column 3 lines 55-63 disclose the summation unit capable of fulfilling the column-wise summation) in a predetermine order (column 10 lines 40-45 disclose a predetermine order according to the format of the in coming bit data).

It would have been obvious to one skill in the art at the time of the invention to employ Kableshkov teaching to Luminari and Erivin regarding reduction of row by summation of rows in a predetermine order, such that it will enhance the statistical capabilities and contributes to the reduction of relational data base query response time (column 2 lines 45-50) for the data.

(2) Regarding claim 4:

Luminari and Erivin teach regarding all the subject matter above.

Luminari and Erivin do not teach regarding summation performed by analog means.

However, Kableshkov teaches summation is performed by analog means (column 4 lines 50-65 disclose that sign bits, exponents bits and mantissa bits

can be handled in an analogous manner using portions of the corresponding register).

It would have been obvious to one skill in the art at the time of the invention to employ Kableshkov teaching to Luminari and Erivin regarding summation performed by analog means. The motivation would that it would conform to standards and requirement such as VAX F-format or IEEE S-format (column 4 lines 50-65).

(3) Regarding claim 5:

Erivin further teaches regarding summation is performed by digital means (column 3 lines 60-67 disclose digital means to effectuation the vertical reduction of the data).

(4) Regarding claims 6 and 12:

Erivin further teaches regarding saving for each column the summation by columns information on the row at which the electrical charge exceeds a predetermined threshold value (column 4 lines 43-47 where logical “1” is seen as the threshold value), indicating that reflected light is detected just in that row, is saved for each column (column 4 lines 1-67 to column 5 lines 1-30 disclose that rows that has detection is label as “1” and that values is save by that row and column).

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Soest (US 5,703,960) discloses lumber defect scanning including multi-dimensional pattern recognition. Especially column 6 lines 40-45 discloses light scattering **within** a wood article having normal grain structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TSUNG-YIN TSAI whose telephone number is (571)270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571)272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tsung-Yin Tsai/

Examiner, Art Unit 2624

October 16, 2009

/Samir A. Ahmed/
Supervisory Patent Examiner, Art Unit 2624